Patent Claims

1. A method for controlling evaporators (4) in refrigeration plants, characterized in that control is carried out after the evaporation process (12) has begun, with the evaporation pressure (12) at the inlet of the evaporator (4) (12) normally being used as one control variable and the refrigerant supercooling temperature (11) upstream of the injection valve (3) being used as second control variable, so that in this way the start of evaporation (12) is defined and controlled.

2. The method for controlling evaporators (4) in refrigeration plants as claimed in claim 1, characterized in that an internal heat exchanger IHE (5) is connected downstream of the evaporator (4).

3. The method for controlling evaporators (3) in refrigeration plants as claimed in claims 1-2, characterized in that a further measured value, the suction vapor temperature (13/14) at the compressor inlet (1), optimizes this control and ensures protection for the compressor (1) (optional).

4. The method for controlling evaporators (4) in refrigeration plants as claimed in claims 1-3, characterized in that further measured values, such as the hot-gas temperature (15) at the exit of the compressor (1), the compressor oil temperature (16), the suction pressure at the compressor (23) and/or the high pressure (22) upstream of the injection valve (3) or downstream of the compressor (1) can be used to optimize or protect the compressor (1).

5. The method for controlling evaporators (4) in refrigeration plants as claimed in claims 1-4, characterized in that, as mentioned above, control is

effected, optimally for the particular type of evaporator, near to the left-hand limit curve of the lg p, h diagram for refrigerant (12).

6. The method for controlling evaporators (4) in refrigeration plants as claimed in claims 1-5, characterized in that this type of control causes the evaporator (4) to be flooded and the degree of flooding to be determined, and at the same time causes the refrigerant suction vapor temperature and refrigerant liquid temperature (13/11) to be monitored and controlled.

7. The method for controlling evaporators (4) in refrigeration plants as claimed in claims 1-6, characterized in that the measured value for limiting the suction vapor temperature (13/14) upstream of the compressor (1) (or the corresponding alternative measured values 14, 15, 16 as described above) over-controls the evaporation control (11, 12) and keeps the suction vapor temperature (14) constant at an optimum and/or maximum value as a function of the compressor.

8. The method for controlling evaporators (4) in refrigeration plants as claimed in claims 1-7, characterized in that the optimum of the process is always in favor of the evaporator (4) and not the IHE (5) (maximum utilization of the enthalpy in the evaporator (4) between the left-hand and right-hand limit curves of the lg p, h diagram for refrigerant and, depending on the temperature level of the IHE (5) (21), with a superheating component in the evaporator (4)).

9. The method for controlling evaporators (4) in refrigeration plants as claimed in claims 1-8, characterized in that one evaporator (4) can be connected to one IHE (5), or a plurality of evaporators

(4) can be connected to one IHE (5) or a plurality of evaporators (4) can be connected to a plurality of IHEs (5), or any type of combinations thereof, to form a refrigeration system (Fig. 10-18).

10. The method for controlling evaporators (4) in refrigeration plants as claimed in claims 1-9, characterized in that, depending on the combination of evaporators (4), IHEs (5), injection valves (3) and compressors (1), the injection valve (3) and the system can be controlled with reduced measured values (9, 10, 11, 12, 13, 14, 15, 16, 22, 23) (in each case 1 measured value (9, 10, 11, 12, 13, 14, 15, 16, 22, 23) for in each case one expansion valve (3) (11, 12) and/or compressor (1) (13, 14, 15, 16), or in each case 1 measured value (9, 10, 11, 12, 13, 14, 15, 16, 22, 23) for a plurality of expansion valves (3) (11, 12) and/or compressors (1) (13, 14, 15, 16) and/or the combination of one and/or more measured values (9, 10, 11, 12, 13, 14, 15, 16, 22, 23) (Fig. 10-18)).